



# REVERSE LOGISTICS: MATTRESS RECYCLING

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## Objectives

This study investigates U.S. manufacturing industries that can utilize raw materials obtained from mattress recycling as an input. To achieve this, a material analysis is conducted to determine the types of raw materials that can be obtained from a variety of mattresses. This research also focuses on the utilization of bed coils and wood as decorative parts while elaborating on their sales via online platforms.

## Methodology

Reverse logistics (RL) is defined as transporting end products from their final destination to the manufacturing floor to regain the material and/or component value. RL is a crucial operation for majority of recycling and/or reuse operations. Mattresses offer a variety of materials which can be recycled. Out of these, wood and metal are two cost-effective raw materials. Remaining content, i.e., plastic, foam and bed springs are more challenging due to the limited economies of scale.

## Data and Analysis

An industry analysis revealed major industries such as Packaging, Electrical and Electronics, Building and Construction, Furniture, Medical Equipment, Toy, Clothing, Refrigeration & Air Conditioning, Insulation, Footwear, Interior Design, Automotive, and Metal Recycling as industries which are heavily reliant on plastics, foam and bed coils as raw materials. Cleaning supply and construction manufacturers are also examined.

## Company Data

Further analysis indicates that shipping and transportation companies such as FedEx, UPS, DHL, USPS, Wal-Mart, Costco, ShopRite, Stop& Shop, Marshalls, Target, IKEA etc. are among the companies that heavily utilize plastics, foam and bed coils as raw materials in their operations.

## Product Data

The following lists alternative products that can be made by using recycled materials such as bed coils and wood [1, 2].

1. Wine Rack
2. Vertical Planter
3. Letter Holder
4. Flower Display
5. Bed Spring Trellis

## Suggested Solutions

- 1. Increasing the supply through a dedicated web site:** Through a dedicated website, public can be informed regarding the benefits of mattress recycling and existing collection centers.
- 2. Contracting online sellers to increase sales:** Amazon, eBay, Alibaba can be contracted to offer raw material sales.
- 3. Utilizing social media platforms to increase awareness:** Despite the fact that mattress recycling drop-off sites and programs, current laws do not prohibit mattresses to be landfilled hindering related efforts [3].
- 4. Finding alternative products and markets to increase the demand:** In addition to above listed products and industries, alternative uses such as cleaning supplies, insulation and transportation padding.



Fig. 1 Wood and bed coils obtained from used mattresses [4]

## Conclusions

Adrienne Farrar Houël, President and CEO of the Greater Bridgeport Community Enterprises, Inc. (GBCE), emphasizes the need for additional markets and more efficient recycling operations [4]. There are various ways to efficiently recycle and reuse the materials obtained via mattress recycling via reverse logistics activities. Given that the demand and supply are increased via recommended solutions to sufficient levels, using economies of scale, a sustainable reverse logistics system can be created for mattress recycling operations. A well-organized logistics network would provide an efficient and effective transportation system by ensuring higher service quality and competitiveness.

## Bibliography

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3. <https://earth911.com/recycling-guide/how-to-recycle-mattresses/>.
4. Houël, GBCE, Site visit, Bridgeport, CT, 2018.